

**Colorado Department of Transportation**  
**Structure Inspection and Inventory Report (English Units)**

Highway Number (ON) 5D: 006G

Mile Post (ON)11: 284.126 mi

Bridge Key: F-16-EN

Inspection Date: 12/15/2011

Sufficiency Rating: 44.3 SD

Rgn/Sectn 2E/2M: 68  
 Trans Region 2T: 02  
 County Code 3: 031  
 DENVER  
 Place Code 4: 20000  
 DENVER  
 Rte.(On/Under)5A: 1  
 Signing Prefix 5B: 2  
 Level of Service 5C: 1  
 Directional Suffix 5E: 0  
 Feature Intersected 6:  
 BRYANT STREET  
 Facility Carried 7:  
 US 6 ML  
 Alias Str No.8A:  
 BRIDGE ENTERPRISE, TC1889  
 Pril Str No. 8P  
 F-16-EM  
 Location 9: 328.05117409  
 IN DENVER  
 Max Clr 10: 99.99  
 BaseHiway Net12: 1  
 IrsinvRout 13A: 000000006G  
 IrsSubRout No13B: 00  
 Latitude 16: 39d 43' 30"  
 Longitude 17: 105d 01' 07"  
 Range18A: 68 W  
 Township18B: 68  
 Section18C: 8  
 Detour Length 19: 2.0 mi  
 Toll Facility 20: 3  
 Custodian 21: 1  
 Owner 22: 1  
 Functional Class 26: 12  
 Year Built 27: 1958  
 Lanes on 28A: 10  
 Lanes Under 28B: 4  
 ADT 29: 131,000  
 Year of ADT 30: 2008  
 Design Load 31: 6  
 Apr Rdwy Width 32: 132.0 ft  
 Median 33: 2  
 Skew 34: 0.00 °  
 Structure Flared 35: 0  
 Sfty Rail 36a/b/c/d: 1 1 1 1  
 Rail ht36h: 37 "in"

Hist Signif 37: 5  
 Posting status 41: A  
 Service on/un 42A/B: 1 1  
 Main Mat/Desgn 43A/B: 2 4  
 Appr Mat/Desgn 44A/B: 0 0  
 Main Spans Unit 45: 3  
 Approach Spans 46: 0  
 Horiz Clr 47: 70.0 ft  
 Max Span 48: 72.2 ft  
 Str Length 49: 158.0 ft  
 Curb Width L/R 50A/B: 1.3 ft 1.3 ft  
 Width Curb to Curb 51: 140.0 ft  
 Width Out to Out 52: 146.0 ft  
 Deck Area: 23,068. sq. ft  
 Min Clr Ovr Brgd 53: 99.99  
 Min Undrclr Ref 54A: H  
 Min Undrclr 54B: 15.5 ft  
 Min Lat Clmce Ref R 55A: H  
 Min Lat Undrclr R 55B: 12.5 ft  
 Min Lat Undrclr L 56: 0  
 Deck 58: 5  
 Super 59: 4  
 Sub 60: 4  
 Channel/Protection 61: N  
 Culvert 62: N  
 Oprtng Rtg Method 63: 1 LF Load Factr  
 Operating Rating 64: 39.0  
 Inv Rtn Method 65: 1  
 Inventory Rating 66: 23.0  
 Asph/Fill Thick 66T: 002 "in"  
 Str. Evaluation 67: 4  
 Deck Geometry 68: 6  
 Undrclr Vert/Hor 69: 7  
 Posting 70: 5  
 Waterway Adequacy 7: N  
 Approach Alignment 72: 8  
 Type of Work 75A: 31  
 Work Done By 75B: 1  
 Length of Improvment 76: 158.1 ft  
 Insp Team Indicator 90B: WHITE TEAM  
 Inspector Name 90C: STADIGM  
 Frequency 91: 24 months  
 FC Frequency 92A: -1  
 UW Frequency 92B: -1  
 SI Frequency 92C: -1  
 FC Inspection Date 93A:

UW Inspection Date 93B:  
 SI Date 93C:  
 Bridge Cost 94: \$ 3,655,520  
 Roadway Cost 95: \$ 365,552  
 Total Cost 96: \$ 5,483,280  
 Year of Cost Estimate 97: 2006  
 Brdr Brgd Code/% 98A/B:  
 Border Bridge Number 99:  
 Defense Highway 100: 0  
 Parallel Structure 101: N  
 Direction of Traffic 102: 2  
 Temporary Structure 103:  
 Highway System 104: 1  
 Fed Lands Hiway 105: 0  
 Year Reconstructed 106: 1967  
 Deck Type 107: 1  
 Wearing Surface 108A: 6  
 Membrane 108B: 0  
 Deck Protection 108C: 0  
 Truck ADT 109: 2 %  
 Trk Net 110: 1  
 Pier Protection 111: #  
 NBIS Length 112: Y  
 Scour Critical 113: N  
 Scour Watch 113M: 0  
 Future ADT 114: 150,650  
 Year of Future ADT 115: 2028  
 CDOT Str Type 120A: CSGC  
 CDOT Constr Type 120B: 5.  
 Inspection Indic 122A:  
 Inspection Trip 122AA:  
 Scheduling Status 122B:  
 Maintenance Patrol 123: 7  
 Expansion Dev/Type124:  
 Brgd Rail Type/Mod 125A/B:  
 Posting Trucks 129A/B/C: 0 0 0  
 Str Rating Date 130: 9/10/1998  
 Special Equip 133: -1  
 Vert Clr N/E 134A/B/C: X 99.99 0.00  
 Vert Clr S/W 135A/B/C: X 99.99 0.00  
 Vertical Clr Date: 12/27/1999  
 Weight Limit Color: 139: 0  
 Str Billing Type: U  
 Userkey 1 - System: ONSYS  
 Userkey 7-Update Indic:

Inspector Name: STADIGM

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**Element Inspection Report**

Elm/En	Description	Units	Total Qty	% in 1	CS 1	% in 2	CS 2	% in 3	CS 3	% in 4	CS 4	% in 5	CS 5
13/4	Unp Conc Deck/AC Ovl	(SF)	23,068	0 %	0	100 %	23,068	0 %	0	0 %	0	0 %	0
110/4	R/Conc Open Girder	(LF)	2,593	51 %	1,313	9 %	238	35 %	912	5 %	130	0 %	0
205/4	R/Conc Column	(EA)	32	78 %	25	9 %	3	3 %	1	9 %	3	0 %	0
215/4	R/Conc Abutment	(LF)	292	100 %	292	0 %	0	0 %	0	0 %	0	0 %	0
234/4	R/Conc Cap	(LF)	280	99 %	278	0 %	1	0 %	0	0 %	1	0 %	0
301/4	Pourable Joint Seal	(LF)	292	75 %	219	25 %	73	0 %	0	0 %	0	0 %	0
308/4	Constr Non Exp Jt	(LF)	632	0 %	0	0 %	0	100 %	632	0 %	0	0 %	0
321/4	R/Conc Approach Slab	(EA)	2	100 %	2	0 %	0	0 %	0	0 %	0	0 %	0
325/4	Slope Prot/Berms	(EA)	2	100 %	2	0 %	0	0 %	0	0 %	0	0 %	0
326/4	Bridge Wingwalls	(EA)	4	100 %	4	0 %	0	0 %	0	0 %	0	0 %	0
331/4	Conc Bridge Railing	(LF)	158	100 %	158	0 %	0	0 %	0	0 %	0	0 %	0
334/4	Metal Rail Coated	(LF)	316	100 %	316	0 %	0	0 %	0	0 %	0	0 %	0
338/4	Conc Curbs/SW	(LF)	474	49 %	230	34 %	160	18 %	84	0 %	0	0 %	0
359/4	Soffit Smart Flag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
362/1	Traf Impact SmFlag	(EA)	2	0 %	0	100 %	2	0 %	0	0 %	0	0 %	0

Elem/Env	Description	Element Notes
13/4	Unp Conc Deck/AC Ovl	2 inches asphalt. Random transverse cracks throughout. Some raveling and longitudinal cracking in MLs. A few patched potholes in MLs #4 and #5 in Span 3 eastbound. 3 to 4 Potholes, and 4 patches in westbound #1, Span 2.
110/4	R/Conc Open Girder	Doubled girders C and D, G and H, J and K, and N and O have moderate deterioration on the bottoms with exposed corroded rebar, due to the leaking longitudinal construction joints over them. At least 12 stirrups at midspan of Girder 1C, and 2 stirrups of Girder 1D have 100% section loss, and some longitudinal bars have approximately 25% section loss. Six stirrups on Girder 3C are broken. Exposed bars in these areas have up to 25 % section loss. Some areas of exposed rebar have significant section loss, and spalling extends behind the primary reinforcement. See Girder Tally Sheet and PHOTOS. A light horizontal crack on the Right side of Girder 2F, is propagating from the vertical crack at Pier cap 2F/girder juncture; see 2003 PHOTO). Exterior girders have diagonal shear cracking at 2 to 3 feet spacing, approximately 20 feet from piers. Girders 2A and 2B have minor high load impact damage with exposed rebar, and all girders in Span 2 have minor spalls, in both directions.
205/4	R/Conc Column	Delams., spalling and moderate deterioration with exposed corroded rebar at Columns 2D, 2M, 3D, and 3M. Seven broken or rusted out ring bars at Column 2D; (see PHOTOS). Tops of columns with bearing loss; the Forward face of 2M 15%, 3D 15% at the Rear, and 10% at the Forward side totaling 25%; (see PHOTOS). Columns 2J, 3G, and 3H, have minor delam. cracks at tops. Others are waterstained.

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Elem/Env	Description	Element Notes
215/4	R/Conc Abutment	Light efflor. at horizontal cracks at the deck junction in Bays 1C, and 1E. Both abutments look OK. Trash building up at both abutments from hobos.
234/4	R/Conc Cap	The P2 Cap has a 1/4 inch vertical crack along the juncture with Girders 1F, and 2F at the Right side, propagating 6 inches into the Right side of Girder 2F; (see 2001 PHOTO). The P2 Cap has a hairline vertical crack in the center of Bay K. The P3 Cap has a hairline vertical crack in center of Bay L.
301/4	Pourable Joint Seal	Assumed between approach slabs and abutments. Covered with asphalt and cracked for the majority of the length in eastbound MLs at A1, and westbound at A4. Light cracking in a couple MLs at other locations.
308/4	Constr Non Exp Jt	Longit joints between girders C & D, J & K and N & O. Plans did not call for any filler. Have leaked bad in the past causing deter on the bottom of the girders mentioned above.
321/4	R/Conc Approach Slab	Covered with asphalt, in the same condition as the deck.
325/4	Slope Prot/Berms	Concrete slope pavement with dirt berms, at both abutments. Berms slightly settled below bottoms of abutment caps, with a few exposed steel H piles. Very few cracks in the concrete panels.
326/4	Bridge Wingwalls	Stub type wing walls. Look OK.
331/4	Conc Bridge Railing	Jersey barrier in the median. Several vertical cracks.
334/4	Metal Rail Coated	Galvanized Type Y railing. Looks good.
338/4	Conc Curbs/SW	Includes the lane divider in westbound. The outside face of the Right in Span 2 is spalled with exposed corroded rebar. Spalling with exposed corroded rebar and delam. cracking on the backside of the Left curb at A1. Longitudinal delam. cracking on inside and outside faces, and tops with spots of scale, on both sides.
359/4	Soffit Smart Flag	Hairline to light transverse cracks, some with efflor. and light rust stains. Delaminated/spalling deck bottom in a few bays near abutments: Bay 1A near A1 has 40 square feet, Bay 3D near A4 has 25 square feet, and Bay 3P near A4 has 50 square feet. 4.5 Square foot spalls with exposed rebar and delam. in Bay 1C near A1, and in Bay 1J near P2. Map cracking with efflor. and light rust stains in Bays 1A, 1O, 1P, 2A, 2B, 2D, 2I, 2O, 2P, 3A, 3B, 3D, 3E, and 3P; (see 20009 SKETCH), e stimated that 20% of the total deck area is contaminated.
362/1	Traf Impact SmFlag	Girders 2A and 2B have impact damage above the southbound lane. An approximate 1 foot spall at each, with 2 inches of exposed rebar on 2B. IMP-MM/?/YY, INSP-12/17/03, REP-00/00/00.

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**Maintenance Activity Summary**

MMS Activity	Description	Recommended	Status	Target Year	Est Cost
*354.02	Supstr	12/14/2001	-1	2011	30000

Repair the bottoms of doubled Girders C & D, G & H, J & K and N & O where deterioration with exposed corroded rebar exists and remove loose concrete as necessary.

353.01	Br Dk Rpr	12/28/2009	-1	2011	30000
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Seal longitudinal construction joints where the bridge was widened and the median closed off, to stop deterioration of girders below.

358.05	Substr	1/29/2008	-1	2011	25000
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Remove delaminated concrete from Columns 2D, 2M, 3D, and 3M, sand blast rebar and patch.

353.08	Replace	12/15/2011	_	2011	1000
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Seal cracks in the deck pavement.

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**Bridge Notes**

Utilities: three 2.5 inch diameter metal conduits on overhangs, 1 at the Left, and 2 at the Right.

Moderate transverse and D-cracking at ends of approach slabs with the approach roadway.

**Inspection Notes**

TIME: 1:20      TEMP: 41      WEATHER: Clear

**Scope:**

☒ NBI: ☒ Element: ☐ Underwater: ☐ Fracture Critical: ☐ Other:      Type: Regular NBI

Inspector: STADIGM

Inspection Team:

Inspection Date: 12/15/2011

Inspector

Inspector